Virginia Department of Health
Plague: Overview for Healthcare Providers

Organism/ Stability	• *Yersinia pestis*: Gram-negative bacteria, bipolar-staining, non-motile bacillus • Sensitive to sunlight and heating; does not survive long outside host • Human plague does not occur naturally in Virginia; it occurs rarely in western states
Natural Reservoir	Rodents (especially ground squirrels and prairie dogs), rabbits, hares. Wild carnivores and domestic cats may also be a source of infection for people.
Route of Infection	• Bite of infected fleas or close contact with infected animals (handling tissues, bites/scratches) • Inhalation of or contact with infective aerosols • Laboratory workers who do not use proper protective equipment are at risk • Person to person transmission for pneumonic and rarely bubonic
Communicability	• Pneumonic: communicable by respiratory droplets (contact at less than 6 feet) when case is symptomatic and has had less than 48 hours of antibiotic therapy • Bubonic: communicable (rarely) through contact with exudates from buboes • Bubonic and septicemic plague can progress to secondary pneumonic plague in ~12% of cases; disease is then communicable by respiratory droplets
Case Fatality *(Based on U.S. cases reported to CDC)*	• Bubonic: 13.5%, Pneumonic: 57.1%, Septicemic: 22.4% • Early treatment of patients is critical
Incubation Period	Range 1 to 8 days, depending on type of plague
Clinical Manifestations	**Bubonic:** fever, headache, weakness, chills, and swollen, extremely painful lymph nodes (buboes). Nausea, vomiting, diarrhea are common.
	Pneumonic: acute onset of high fever, chills, headache, malaise, and productive cough (initially watery then bloody). Rapid development of dyspnea, stridor, cyanosis, and respiratory failure with patchy or consolidated bronchopneumonia. Terminal event is respiratory failure, shock, and a bleeding diathesis.
	Septicemic: fever, chills, headache, malaise, and GI disturbances. May progress rapidly to septic shock, consumptive coagulopathy, meningitis, coma.
Laboratory Tests/ Sample Collection	Bronchial/tracheal wash or induced sputum (5-10 cc) for pneumonic; lymph node aspirate (1-2 cc) for bubonic; blood (5-10 cc) for septicemic. For consult, page the state lab (DCLS), available 24/7, at 804-418-9923.
Treatment (adults) *Switch to oral therapy when clinically appropriate.*	• **Streptomycin (preferred),** 1 g IM twice daily X 10 days, or • **Gentamicin (preferred),** 5 mg/kg IM or IV once daily or 2 mg/kg loading dose followed by 1.7 mg/kg IM or IV three times daily X 10 days, or • IV doxycycline, ciprofloxacin, or chloramphenicol are alternatives
Prophylaxis (adults)	Prophylaxis should be given to close contacts of patients (contact at less than 6 feet before 48 hours of antibiotics): • **Doxycycline (preferred),** 100 mg orally twice daily X 7 days, or • **Ciprofloxacin (preferred),** 500 mg orally twice daily X 7 days
Infection Control	• Use standard precautions for all types of plague • For pneumonic plague, also follow droplet precautions until patient has received 48 hours of antibiotics and has improved clinically; place surgical mask on patient, healthcare workers and other close contacts (N-95 mask not required, but is also protective); use gloves, gown and eye protection; limit movement/transport of patients • Practice concurrent disinfection of sputum and purulent discharges • If applicable, use an insecticide to rid patients and their clothing of fleas
Vaccine	US licensed vaccine was discontinued in 1999 and is no longer available.
Public Health	Suspected cases of plague must be reported to the local public health department by the most rapid means available. Close contacts should be placed under medical surveillance. Quarantine may be necessary.

For more information, refer to: Inglesby TV; Dennis DT; Henderson DA, et al. Plague as a Biological Weapon: Medical and Public Health Management. *JAMA*. 2000;283(17):2281-2290. Available online at: http://jama.ama-assn.org/

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